

OR

4	a.	Compare User Level Threads and Kernel Level threads.	4	L4	CO2
	b.	Illustrate with a neat sketch, Process States and Process Control Block (PCB).	8	L2	CO2
	c.	Consider the set of 6 processes whose arrival time and burst time are given below.	8	L3	CO2

Process ID	Arrival Time	Burst Time
P ₁	5	5
P ₂	4	6
P ₃	3	7
P ₄	1	9
P ₅	2	2
P ₆	6	3

If the CPU scheduling policy is Round Robin with time quantum = 3, calculate Average Waiting time and Turnaround time.

Module – 3

5	a.	Discuss in detail the critical section problem and write the algorithm for producer consumer problem.	10	L2	CO3
	b.	Consider the following system using data structures in the Bankers Algorithm with resource type ABC Maximum instance present in the system A = 10, B = 5, C = 7.	10	L3	CO3

Process	Allocation			Max			Available		
	A	B	C	A	B	C	A	B	C
P ₀	0	1	0	7	5	3	3	3	2
P ₁	2	0	0	3	2	2			
P ₂	3	0	2	9	0	2			
P ₃	2	1	1	2	2	2			
P ₄	0	0	2	4	3	3			

i. Calculate Need Matrix
ii. Check whether system is safe or not.

OR

6	a.	Outline the solutions of Dining – Philosopher problem.	5	L2	CO3
	b.	Describe a resource allocation graph with an example.	5	L4	CO3
	c.	Using Bankers algorithm, solve the following problem :	10	L2	CO3

Process	Allocation				Max				Available			
	A	B	C	D	A	B	C	D	A	B	C	D
P ₀	0	0	1	2	0	0	1	2	1	5	2	0
P ₁	1	0	0	0	1	7	5	0				
P ₂	1	3	5	4	2	3	5	6				
P ₃	0	6	3	2	0	6	5	2				
P ₄	0	0	1	4	0	6	5	6				

i. Calculate the Need Matrix
ii. Check whether system is safe or not.

Module – 4

7	a.	Discuss the given memory management technique with diagram. i. Paging ii. Translation Look-Aside Buffer.	6 6	L2	CO4
	b.	Discuss about Contiguous Memory Allocation with a neat diagram.	8	L2	CO4

OR

8	a.	Consider the reference string : 6, 1, 1, 2, 0, 3, 4, 6, 0, 2, 1, 2, 1, 2, 0, 3, 2, 1, 2, 0 For a memory with three frames and calculate number of page faults by using i. LRU replacement ii. FIFO replacement.	10	L3	CO4
	b.	Describe the process of demand paging in OS.	10	L2	CO4

Module – 5

9	a.	Explain in detail about directory and disc structure.	6	L2	CO5
	b.	Analyze the file system implementation.	6	L4	CO5
	c.	The requested tracks, in the order received are {176, 79, 34, 60, 92, 11, 41, 114} Apply the following disk scheduling algorithms starting track at 50. i) FCFS ii) SSTF. Calculate the total seek time.	8	L3	CO5

OR

10	a.	Explain Free Space Management with an example.	6	L2	CO2
	b.	Explain the Access Matrix method of system protection with the domain as objects and its implementation.	6	L2	CO2
	c.	The requested tracks, the order received are {176, 79, 34, 60, 92, 11, 41, 114} Apply the following disk scheduling algorithms starting track at 50. i) Look ii) C – Look. Calculate the total seek time.	8	L3	CO3
